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- (74) Agents: **WHITE, Stephanie, R.** et al.; Osler, Hoskin & Harcourt LLP, Suite 1500, 50 O'Connor Street, Ottawa, Ontario K1P 6L2 (CA).
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: OPHTHALMIC DEVICES AND RELATED METHODS AND COMPOSITIONS

(57) Abstract: Devices, methods, and compositions for improving vision or treating diseases, disorders or injury of the eye are described. Ophthalmic devices, such as corneal onlays, corneal inlays, and full-thickness corneal implants, are made of a material that is effective in facilitating nerve growth through or over the device. The material may include an amount of collagen greater than 1% (w/w), such as between about 10% (w/w) and about 30% (w/w). The material may include collagen polymers and/or a second biopolymer or water-soluble synthetic polymer cross-linked using EDC/NHS chemistry. The material may additionally comprise a synthetic polymer. The devices are placed into an eye to correct or improve the vision of an individual or to treat a disease, disorder or injury of an eye of an individual.

WO 2006/015490 A1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/001240

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons :

1. ☒ Claim Nos. : 27

because they relate to subject matter not required to be searched by this Authority, namely :

claim 27 is directed to a method of treatment of the human or animal body (Rule 39.1 (iv) PCT), however, the search was carried out on the alleged effects of the composition.

2. ☐ Claim Nos. :

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically :

3. ☐ Claim Nos. :

because they are dependant claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows :

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos. :
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim Nos. :

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC(7): A61L 27/24, A61L 27/54, A61F 2/14, G02B 1/00 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(7): A61L-27, G02B-1, A61F-2/14 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Canadian Patent Database, WEST (USPTO), PubMed Keywords = collagen; cross*link*; corneal, eye, ophthalm*; clear, transparent and translucent		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,581,030 (Bruns, R. B. et al.) 8 April 1986 (08.04.1986) Abstract, Col. 2-3 and Examples 1 and 2	1-7, 13, 16, 18, 19, 23 and 27-29
Y		8-12, 17, 21, 22 and 26
X	US 4,223,984 (Miyata, T. et al.) 23 September 1980 (23.09.1980) Entire document	1-7, 13-16, 18, 19, 23, and 27-29
Y		8-12, 17, 21, 22 and 26
X	US 2003/0018123 (Bagrov, S. N. et al.) 23 January 2003 (23.01.2003) Entire document	1-6, 16, 19, 23 and 27-29
Y		8-12, 17, 21, 22 and 26
Y	Li, F. et al. "Cellular and nerve regeneration within a bioprosthetic extracellular matrix for corneal implantation" Proc. Nat. Acad. Sci. 2003 (Dec. 23), Vol. 100 (No. 26), pages 15346-15351. Entire document	8-12, 17, 21, 22 and 26
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 24 November 2005 (24-11-2005)	Date of mailing of the international search report 7 December 2005 (07-12-2005)	
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer Stephen Decker (819) 934-2333	

INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, Y	Li, F. et al. "Recruitment of multiple cell lines by collagen-synthetic copolymer matrices in corneal regeneration" Biomaterials 2005 (Jun.), Vol. 26 (No. 16), pages 3093-3104. Entire document	8-12, 17, 21, 22 and 26
Y	Carlsson, D. J. et al. "Bioengineered corneas: how close are we?" Curr. Opin. Ophthalmol. 2003 (Aug.), Vol. 14 (No. 4), pages 192-197. Pages 195-196	20
A	Leskul, M. et al. "CxGELSIX: a novel preparation of type VI collagen with possible use as a biomaterial" Cornea 2000 (Mar.), Vol. 19 (No. 2), pages 194-203.	1-29
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/001240

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/001240

Continued from Supplemental Page 6

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